

INVENTOR SEARCH

=&gt; d his 177

(FILE 'CASREACT' ENTERED AT 15:51:07 ON 29 OCT 2007)  
L77 3 S L53 AND L71

FILE 'STNGUIDE' ENTERED AT 15:52:47 ON 29 OCT 2007

=&gt; d que 177

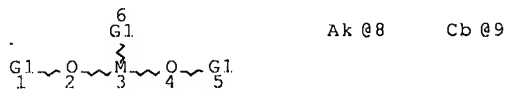
L49 14 SEA FILE=CASREACT ABB=ON PLU=ON MIYAKE N?/AU  
L50 415 SEA FILE=CASREACT ABB=ON PLU=ON WATANABE T?/AU  
L51 77 SEA FILE=CASREACT ABB=ON PLU=ON (ASAHI(W)KASEI?)/PA,C  
S,SO,CO  
L53 5 SEA FILE=CASREACT ABB=ON PLU=ON (L49 OR L50) AND L51  
L71 QUE ABB=ON PLU=ON PY<2003 OR PRY<2003 OR AY<2003 OR  
MY<2003 OR REVIEW/DT  
L77 3 SEA FILE=CASREACT ABB=ON PLU=ON L53 AND L71

=&gt; d his 175

(FILE 'HCAPLUS' ENTERED AT 15:39:19 ON 29 OCT 2007)  
L75 2 S L72 AND L73

=&gt; d que 175

L2 19 SEA FILE=REGISTRY ABB=ON PLU=ON (10301-02-7/BI OR  
104-76-7/BI OR 111-27-3/BI OR 123-51-3/BI OR 124-38-9/B  
I OR 14858-73-2/BI OR 149746-25-8/BI OR 181116-34-7/BI  
OR 2050-95-5/BI OR 3644-24-4/BI OR 62774-20-3/BI OR  
64401-37-2/BI OR 660402-27-7/BI OR 660402-29-9/BI OR  
660402-31-3/BI OR 71-36-3/BI OR 7523-15-1/BI OR  
78-83-1/BI OR 818-08-6/BI)  
L3 3 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND ESTER?/CNS  
L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON 124-38-9/RN  
L12 STR



VAR G1=8/9

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

ECOUNT IS M1-X14 C AT 8

ECOUNT IS M5-X20 C AT 9

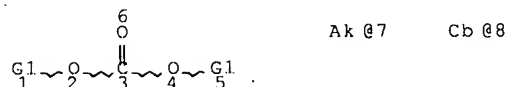
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 8

STEREO ATTRIBUTES: NONE

L17 204470 SEA FILE=REGISTRY ABB=ON PLU=ON (M(L)C(L)H(L)O)/ELS(L  
)4/ELC.SUB  
L19 3362 SEA FILE=REGISTRY SUB=L17 SSS FUL L12  
L20 3 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND L19  
L23 STR



L79 ANSWER 11 OF 23 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1999:97437 HCAPLUS Full-text  
 DOCUMENT NUMBER: 130:168016  
 TITLE: **Preparation of carbonic acid esters**  
 INVENTOR(S): Itakura, Toshiyasu; Sako, Takeshi  
 PATENT ASSIGNEE(S): Agency of Industrial Sciences and Technology,  
 Japan; National Institute of Advanced  
 Industrial Science & Technology  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11035521	A	19990209	JP 1997-192201	1997 0717
JP 3702333	B2	20051005	JP 1997-192201	1997 0717

OTHER SOURCE(S): CASREACT 130:168016; MARPAT 130:168016

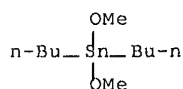
ED Entered STN: 12 Feb 1999

AB Title compds. are **prepared** by reaction of CO<sub>2</sub> with ortho esters in the presence of metal alkoxides and halo compds. (chosen from quaternary phosphonium salts or alkali metal salts). Me orthoacetate was treated with CO<sub>2</sub> in the presence of Bu<sub>2</sub>Sn(OMe)<sub>2</sub> and Bu<sub>4</sub>NI under ≤250 kg/cm<sup>2</sup> at 150° for 24 h to give 11.22% di-Me carbonate.

IT 1067-55-6, Dibutyltin dimethoxide  
 RL: CAT (Catalyst use); USES (Uses)  
 (**preparation** of carbonic acid esters by carbonylation of CO<sub>2</sub> with ortho esters in the presence of metal alkoxide and halo compound catalysts.)

RN 1067-55-6 HCAPLUS

CN Stannane, dibutyldimethoxy- (CA INDEX NAME)



IT 616-38-6P, Dimethyl carbonate

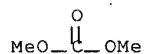
RL: IMF (Industrial manufacture); SPN (Synthetic preparation);

PREP (Preparation)

(**preparation** of carbonic acid esters by carbonylation of CO<sub>2</sub> with ortho esters in the presence of metal alkoxide and halo compound catalysts.)

RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (CA INDEX NAME)

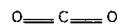


IT 124-38-9, Carbon dioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(**preparation** of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)

RN 124-38-9 HCAPLUS

CN Carbon dioxide (CA INDEX NAME)



IC ICM C07C068-04

ICS B01J031-02; C07C069-96; C07B061-00

CC 23-17 (Aliphatic Compounds)

ST ortho ester carbonylation **carbon dioxide**;  
metal alkoxide catalyst carbonylation ortho ester; halo catalyst  
carbonylation ortho ester; carbonic acid ester **prepn**

IT Esters, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(ortho acid; **preparation** of carbonic acid esters by  
carbonylation of CO<sub>2</sub> with ortho esters in the  
presence of metal alkoxide and halo compound catalysts.)

IT Carbonylation catalysts

(**preparation** of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)

IT Alkali metal compounds

Crown ethers

Halogen compounds

Metal alkoxides

Phosphonium compounds

Quaternary ammonium compounds, uses

RL: CAT (Catalyst use); USES (Uses)

(**preparation** of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)

IT Carbonate esters

RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
PREP (Preparation)

(**preparation** of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)

IT 109-88-6, Magnesium dimethoxide 311-28-4, Tetrabutylammonium  
iodide 1067-52-3, Tributyltin methoxide 1067-55-6,  
Dibutyltin dimethoxide 3115-66-0, Tetrabutylphosphonium iodide  
7440-67-7, Zirconium, uses 7681-11-0, Potassium iodide, uses  
16069-36-6, Cis-dicyclohexano-18-crown-6 93644-58-7

RL: CAT (Catalyst use); USES (Uses)

(**preparation** of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)

IT 616-38-6P, Dimethyl carbonate

RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
PREP (Preparation)

(**preparation** of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)

IT 124-38-9, Carbon dioxide, reactions

149-73-5, Methyl orthoformate 1445-45-0, Methyl orthoacetate

RL: RCT (Reactant); RACT (Reactant or reagent)

(**preparation** of carbonic acid esters by carbonylation of  
CO<sub>2</sub> with ortho esters in the presence of metal alkoxide  
and halo compound catalysts.)

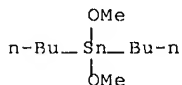
L79 ANSWER 15 OF 23 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1995:499831 HCAPLUS Full-text  
 DOCUMENT NUMBER: 122:290332  
 TITLE: **Preparation** of carbonic acid esters  
 from **carbon dioxide** and  
 alcohols  
 INVENTOR(S): Ko, Ko; Ogata, Fujimaro  
 PATENT ASSIGNEE(S): Showa Denko Kk, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07033715	A	19950203	JP 1993-182851	1993 0723

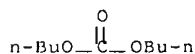
PRIORITY APPLN. INFO.: <-- JP 1993-182851  
 1993  
 0723

OTHER SOURCE(S): CASREACT 122:290332; MARPAT 122:290332

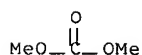
ED Entered STN: 20 Apr 1995  
 AB Carbonic acid esters are **prepared** by reaction of alcs. with CO<sub>2</sub> using metal compound catalysts in the presence of dehydration agents to remove H<sub>2</sub>O. A mixture of 10 mL MeOH, Bu<sub>2</sub>Sn(OMe)<sub>2</sub>, and HC(OMe)<sub>3</sub> was treated with CO<sub>2</sub> at 150° under .apprx.100 kg/cm<sup>2</sup> for 24 h to give 5.9 g Me<sub>2</sub>CO<sub>3</sub>.  
 IT 1067-55-6, Dibutyldimethoxytin  
 RL: CAT (Catalyst use); USES (Uses)  
 (**preparation** of carbonic acid esters from CO<sub>2</sub> and alcs. with metal catalysts and dehydration agents)  
 RN 1067-55-6 HCAPLUS  
 CN Stannane, dibutyldimethoxy- (CA INDEX NAME)



IT 542-52-9P, Dibutyl carbonate 616-38-6P, Dimethyl carbonate  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
 PREP (Preparation)  
 (**preparation** of carbonic acid esters from CO<sub>2</sub> and alcs. with metal catalysts and dehydration agents)  
 RN 542-52-9 HCAPLUS  
 CN Carbonic acid, dibutyl ester (CA INDEX NAME)



RN 616-38-6 HCAPLUS  
 CN Carbonic acid, dimethyl ester (CA INDEX NAME)



IT 124-38-9, Carbon dioxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of carbonic acid esters from CO2  
 and alcs. with metal catalysts and dehydration agents)  
 RN 124-38-9 HCAPLUS  
 CN Carbon dioxide (CA INDEX NAME)

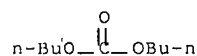


IC ICM C07C069-96  
 ICS B01J031-02; C07C068-04  
 ICA C07B061-00  
 CC 23-8 (Aliphatic Compounds)  
 Section cross-reference(s): 45  
 ST carbonate ester **prepn**; carbon dioxide  
 reaction alc dehydration  
 IT Catalysts and Catalysis  
 Drying agents  
 (preparation of carbonic acid esters from CO2  
 and alcs. with metal catalysts and dehydration agents)  
 IT Zeolites, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (preparation of carbonic acid esters from CO2  
 and alcs. with metal catalysts and dehydration agents)  
 IT Alcohols, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of carbonic acid esters from CO2  
 and alcs. with metal catalysts and dehydration agents)  
 IT 1067-55-6, Dibutyldimethoxytin  
 RL: CAT (Catalyst use); USES (Uses)  
 (preparation of carbonic acid esters from CO2  
 and alcs. with metal catalysts and dehydration agents)  
 IT 542-52-9P, Dibutyl carbonate 616-38-6P, Dimethyl  
 carbonate  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation);  
 PREP (Preparation)  
 (preparation of carbonic acid esters from CO2  
 and alcs. with metal catalysts and dehydration agents)  
 IT 75-87-6, Chloral 149-73-5, Trimethyl orthoformate 538-75-0,  
 DCC 1445-45-0, Trimethyl orthoacetate 5009-27-8,  
 Cyclopropanone  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (preparation of carbonic acid esters from CO2  
 and alcs. with metal catalysts and dehydration agents)  
 IT 67-56-1, Methanol, reactions 71-36-3, Butanol, reactions  
 124-38-9, Carbon dioxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of carbonic acid esters from CO2  
 and alcs. with metal catalysts and dehydration agents)

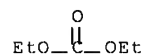
L79 ANSWER 22 OF 23 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1979:168087 HCAPLUS Full-text  
 DOCUMENT NUMBER: 90:168087  
 TITLE: Dialkyl carbonates from alkanols and  
**carbon dioxide**  
 INVENTOR(S): Yamazaki, Noboru; Nakahama, Seiichi; Endo,  
 Kazuo  
 PATENT ASSIGNEE(S): Mitsubishi Chemical Industries Co., Ltd.,  
 Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 54003012	A	19790111	JP 1977-68310	1977 0609
			<--	
JP 56040707	B	19810922	JP 1977-68310	A 1977 0609
PRIORITY APPLN. INFO.:				
			<--	

ED Entered STN: 12 May 1984  
 AB (RO)2CO (R = Me, Et, Pr, Bu) were prepared by heating ROH with CO2 in the presence of  
 Bu2Sn(OMe)2 (I), Bu2Sn(OEt)2, Sn(OMe)4, Sn(Obu)4, Ti(OEt)4, or Ti(Obu)4. Thus, 0.5 g I  
 was autoclaved with 5 mL EtOH and 5 kg/cm2 CO2 at 100° for 24 h to give 220 mol%  
 (EtO)2CO and 95 mol% MeOCO2Et based on I.  
 IT 542-52-9P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by reaction butanol with carbon  
 dioxide)  
 RN 542-52-9 HCAPLUS  
 CN Carbonic acid, dibutyl ester (CA INDEX NAME)

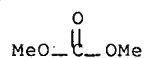


IT 105-58-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by reaction ethanol with carbon  
 dioxide)  
 RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (CA INDEX NAME)



IT 616-38-6P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of, by reaction of methanol with  
 carbon dioxide)  
 RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (CA INDEX NAME)

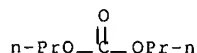


IT 623-96-1P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction of propanol with  
carbon dioxide)

RN 623-96-1 HCAPLUS

CN Carbonic acid, dipropyl ester (CA INDEX NAME)

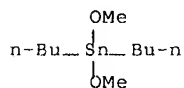


IT 1067-55-6

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of carbon dioxide with alkanols  
in presence of)

RN 1067-55-6 HCAPLUS

CN Stannane, dibutyldimethoxy- (CA INDEX NAME)

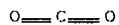


IT 124-38-9, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with alkanols, dialkyl carbonates from)

RN 124-38-9 HCAPLUS

CN Carbon dioxide (CA INDEX NAME)



IC C07C069-96

CC 23-17 (Aliphatic Compounds)

ST alkyl carbonate; carbonate dialkyl; alkanol esterification  
carbon dioxide

IT Esterification  
(of alkanols with carbon dioxide)

IT 542-52-9P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction butanol with carbon  
dioxide)

IT 105-58-8P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction ethanol with carbon  
dioxide)

IT 616-38-6P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction of methanol with  
carbon dioxide)

IT 623-96-1P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by reaction of propanol with  
carbon dioxide)

IT 1067-55-6  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of carbon dioxide with alkanols  
in presence of)

IT 124-38-9, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with alkanols, dialkyl carbonates from)

IT 71-36-3, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with carbon dioxide, di-Bu  
carbonate from)

IT 64-17-5, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with carbon dioxide, di-Et  
carbonate from)

IT 67-56-1, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with carbon dioxide, di-Me  
carbonate from)

IT 71-23-8, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with carbon dioxide, di-Pr  
carbonate from)